



Original Article

Novelties in *Myrcia* sect. *Calyptranthes*: a new species and a disjunct distribution from the Mesoamerican flora

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Abstract: We present a new species of *Myrcia* sect. *Calyptranthes*, *Myrcia fariae* P.O.Rosa & Proença, endemic to a microregion in the state of Tocantins, Brazil, with its diagnosis, description, scientific illustration, geographic distribution and conservation analysis. In addition to the new species, we also present the consolidation of the distribution of *Myrcia calderonii* (Standl.) A.R.Lourenço & Sánchez-Cháv. in Brazil, a significant disjunction in the distribution supported by morphological and molecular analyses.

Keywords: *Myrcia sensu lato*, *Calyptranthes* section, Cerrado, Paranã, Tocantins.

Resumo: Novidades em *Myrcia* seção *Calyptranthes*: uma nova espécie e distribuição disjunta para a flora mesoamericana. Apresentamos uma nova espécie de *Myrcia* seção *Calyptranthes*, *Myrcia fariae* P.O.Rosa & Proença, endêmica de uma microrregião no estado do Tocantins, Brasil, acompanhada de sua diagnose, descrição, ilustração científica, distribuição geográfica e análise de estado de conservação. Além da nova espécie, apresentamos também a consolidação da distribuição geográfica de *Myrcia calderonii* (Standl.) A.R.Lourenço & Sánchez-Cháv. no Brasil, uma disjunção significativa na distribuição apoiada por análises morfológicas e moleculares.

Palavras-chave: *Myrcia sensu lato*, seção *Calyptranthes*, Cerrado, Paranã, Tocantins.

Introduction

Myrtaceae is one of the most representative families in the Brazilian flora, not only for the high number of species, but also for the abundance of individuals in areas of environmental equilibrium and the production of fruits that are important for the maintenance of local wildlife (Staggemeier et al., 2017; Wagner et al., 2022). Amongst more than 1,200 species, *Myrcia* and *Eugenia* are notable for their diversity with more than 830 representatives, standing amid the most numerous genus of Brazilian flora (Flora e Funga do Brasil, 2026; POWO, 2026).

The once recognized genus *Calyptranthes* - Nova Genera et Species Plantarum seu Prodromus 5, 79–80. 1788 had *nomina* and type *conservanda* against *Chytraculia* P. Browne (1756) but also *nomina rejicienda* against

Myrcia DC.. *Calyptranthes*, as originally described by Swartz (1788) had the following diagnosis: “*Calyx truncatus, superus, operculo calyptriiformi, deciduo. Cor. nulla. Bacca monolcularis 1-4-sperma*”.

Berg (1857), in his treatment for Myrtaceae in the *Flora Brasiliensis*, described the former subtribe Myrcioideae with ten genera: *Cerqueiria*, *Gomidesia*, *Rubachia*, *Marlierea*, *Calyptranthes*, *Calyptromyrcia*, *Aulomyrcia*, *Eugeniopsis*, *Myrcia* and *Myrceugenia*. Over time most of these genera have been subsumed into *Myrcia*. In Landrum & Kawasaki (1997), a treatment of Brazilian Myrtaceae genera, the authors considered three genera for Myrciinae: *Myrcia*, *Calyptranthes* and *Myrceugenia*, with *Gomidesia* and *Marlierea* treated as synonyms of *Myrcia*.

Lucas et al. (2018) published a new classification pre-

senting *Myrcia sensu lato* with nine sections. Section *Calyptranthes* has as its main characters “calyx fused into a calyptra, falling completely at anthesis or remaining attached at a single point on rim; fruiting calyx without or occasionally with calyptra remains”. And a slightly more profuse description (also condensed from Lucas et al., 2018) as “Trees bearing pale yellow to red or brown, simple or often t-shaped, bristling trichomes; branchlets compressed or flattened to terete; branching sympodial; inflorescence paniculate, flowers opposite; buds apiculate; petals 0 – 2 (– 5), small, calyx fused and calyptrate; floral disc glabrous; staminal ring narrow; hypanthium glabrous internally, extending into a turbinate tube beyond the ovary; ovary bi-locular, with 2 ovules per locule; fruits globose with persistent apical hypanthium tube, calyptra generally falling or occasionally still attached at one side of the rim”.

Myrcia has 423 currently accepted names for the Brazilian flora, of which a little more than 70 belongs to section *Calyptranthes*. Tocantins state currently has only 15 catalogued species of *Myrcia*, ranking as the twenty-second Brazilian state in number of species for the genus (Santos et al., 2026). Here we describe a new species for the section and provide a botanical illustration, its geographic distribution and conservation status. We also present a discussion about the extension occurrence of *Myrcia calderonii* a species that shows an odd disjunct distribution between the Mesoamerican and Central Brazil.

Material and Methods

The new species is endemic to Tocantins State, Brazil. The description is based on botanical collections deposited in national and European herbaria: BR, CEN, G, HEPH, IBGE, K, M, P, RB, UB, W (Thiers, 2025) as well as online collections available in the Re flora Virtual Herbarium (2025), SpeciesLink (2025) and NYBG Virtual Herbarium (2025).

The diagnosis and description follow the order proposed by Stearn (1983). More than 50 morphological characters were evaluated according to Radford (1986) and Beentje (2012). Weberling (1992) was used to define the inflorescence. Vegetative branches were measured with a ruler and reproductive characters with a digital caliper. Details of the branches and dissected materials were observed with a Leica MZ6 stereomicroscope with a Leica EC3 attached camera, with which the particularities were photographed (Figure 1). The imaging software provides an automatic scale adjusted according to the amplification of the magnifying glass. Preliminary assessment of conservation status was held following the IUCN categories and criteria (IUCN, 2024); geographic distributions and areas were calculated according to Bachman et al. (2011).

The disjunct distribution has been evaluated since 2012 through discussions with several family experts and was finally proven with the publication of the family’s latest phylogeny (Neotropical Myrtaceae Working Group: Staggemeier et al., 2024).

Results

1. Taxonomic Treatment

***Myrcia fariae* P.O.Rosa & Proença sp. nov.** Type: —BRAZIL. Tocantins: Conceição do Tocantins, Margem direita do Rio Palmas na ponte sobre a TO-050, 12°25’06”S, 47°11’51”W, 336 m, 1 September 2014, Faria et al. 4108 (holotype HEPH!, isotype UB!). Figure 1, 2.

Myrcia fariae resembles *M. pulchella* (DC.) A.R.Lourenço & E.Lucas (2018) since both have a sparse rufus indumentum and few flowered inflorescences (less than 15 flowers per inflorescence) but differs in having a larger leaf blade (3.8 – 8.5 x 1.8 – 9 cm vs. 1.8–3.2 x 1.0–2.0 cm), mostly elliptical, and young branches winged vs. terete. *Myrcia fariae* also resembles *M. neolucida* A.R.Lourenço & E.Lucas (2018) in the shape of the leaf blades, mostly elliptical, but *M. fariae* has smaller discolorous leaf blades (3.8 – 8.5 x 1.8 – 9 cm vs. *M. neolucida* concolorous 5.5 – 15 x 2.2 – 7 cm). Finally, *M. neolucida* has multiflorous inflorescences (more than 20 flowers (Santos et al., 2026)) versus the 1 – 13 (frequently 5 or 7) inflorescence of *M. fariae*.

Tree 2.5 – 3 m tall; smooth trunk, stem rhytidome shed in plates; trichome tector simple or forked (or T shaped), indumentum pubescent, rufous (or ferruginous) on the branches, present on the main vein of both leaf surfaces, petiole, bracts and flower buds; translucent oil glands present on branches, leaves and flower buds. **Branches** terete at the base, winged at the apex, nodose. **Leaves** opposite, petiole canaliculate, 0.15 – 0.45 cm.; leaf blade 3.8 – 8.5 x 1.8 – 9 cm, elliptical, rarely obovate, papery, discoloured, apex rounded to acute, margin slightly undulate, base rounded; primary vein grooved up to $\frac{3}{4}$ of the adaxial surface, secondary veins inconspicuous on both surfaces, angle of the median secondary vein in relation to the primary vein 61 – 74 degrees, collector vein 2, distance from the innermost collector vein to the edge 0.1 – 0.15 cm. **Inflorescence** an impoverished thyrsus, 1 - [5-7]– 13 flowers per inflorescence branch, lax, subterminal, axillary, 3.1 – 4.7 cm, 2 – 4 reproductive branches per node, opposite; bract present, 0.05 – 0.1 cm, lanceolate, bracteole deciduous, not seen; flower sessile or subsessile 0.2 – 1 cm, floral bud elliptical to obovoid, not constricted at basis, 0.3 – 0.5 x 0.2 – 0.3 cm; calyx apex fused into a calyptra, acute, anthesis regular; vestigial petals absent; staminal ring glabrous; ovary 2-locular, 2 ovules per locule. **Fruit** not seen.

Examined material: BRAZIL. Tocantins: Paranã, Fazenda São João, 12°58’14”S, 47°30’21”W, altitude, 9 September 2003, *Sevilha et al.* 3487 (CEN!, UB!). Município, Fazenda Petrolina, 12°57’23”S, 47°42’35”W, altitude, 13 September 2003, *Sevilha et al.* 3551 (CEN!, UB!, UFP).

Ethymology: *Myrcia fariae* is a tribute to the profuse collector and botanical expert Jair Eustáquio Quintino de Faria Júnior and his family. Mr. Jair Faria is a remarkable botanical collector, taxonomist, myrtle researcher and specialist in plants in general, especially from the cen-

tral region of Brazil.

Geographic distribution: From all the herbaria visited (list upward) only three specimens of this species are known so far, they are all from Tocantins state in a range of 700 square kilometres. The species were found at rocky fields near a riverbank, “cerrado” vegetation associated with intermittent watercourse and gallery forest in a mild undulating terrain.

Preliminary assessment of conservation status: The extent of occurrence (EOO) of *M. fariae* is 705.936 km², and its area of occupancy (AOO; GeoCAT in Bachman et al. (2011) is 12 km². There is a continuing decline in both EOO and AOO, inferred from the rate of habi-

tat loss. According to the Annual Deforestation Report (RAD, 2024) published by MapBiomas, deforestation in Tocantins increased by 177.9% in 2023. The state lost a total of 230,253 hectares of native vegetation and rose from the fifth to the third position among the most deforested states in Brazil that year. Paranã, one of the municipalities where species occurs, recorded one of the highest deforestation alert levels in the state. Additionally, none of the collection sites for *M. fariae* are within a protected area. Therefore, based on geographic criteria B1ab(ii,iii) and B2b(ii,iii), we propose that if a formal assessment were conducted, *M. fariae* would likely qualify as Endangered (EN; IUCN 2024).



Figure 1: *Myrcia fariae* in detail: A) 2-locule, 2-ovule per locule ovary; B) Glabrous staminal ring; C) T-shaped trichome; D) Winglet young branches.

Key to species of *Myrcia* sect. *Calyptranthes*

- 1. Strigose, withish to rufus indumentum, more than 20 flowers per inflorescence *M. neolucida*
- 1. Sparse rufus indumentum, less than 15 flowers per inflorescence
 - 2. Leaf blade 1,8-3,2 x 1,0-2,0 cm, mostly obovate, young branches terete *M. pulchella*
 - 2. Leaf blade 3.8 – 8.5 x 1.8 – 9 cm, mostly elliptical, young branches winged..... *M. fariae*

2. A disjunct distribution in the core region of Brazil

When studying the types of this group we found a puzzle to be solved: a group of specimens from Goiás, ini-

tially treated as new species, was very similar to the type of a Mesoamerican species, *Calyptranthes lindeni-ana* O.Berg now recognized as *Myrcia calderonii* (Standl.) A.R.Lourenço & Sánchez-Chávez (Lourenço et al., 2018).

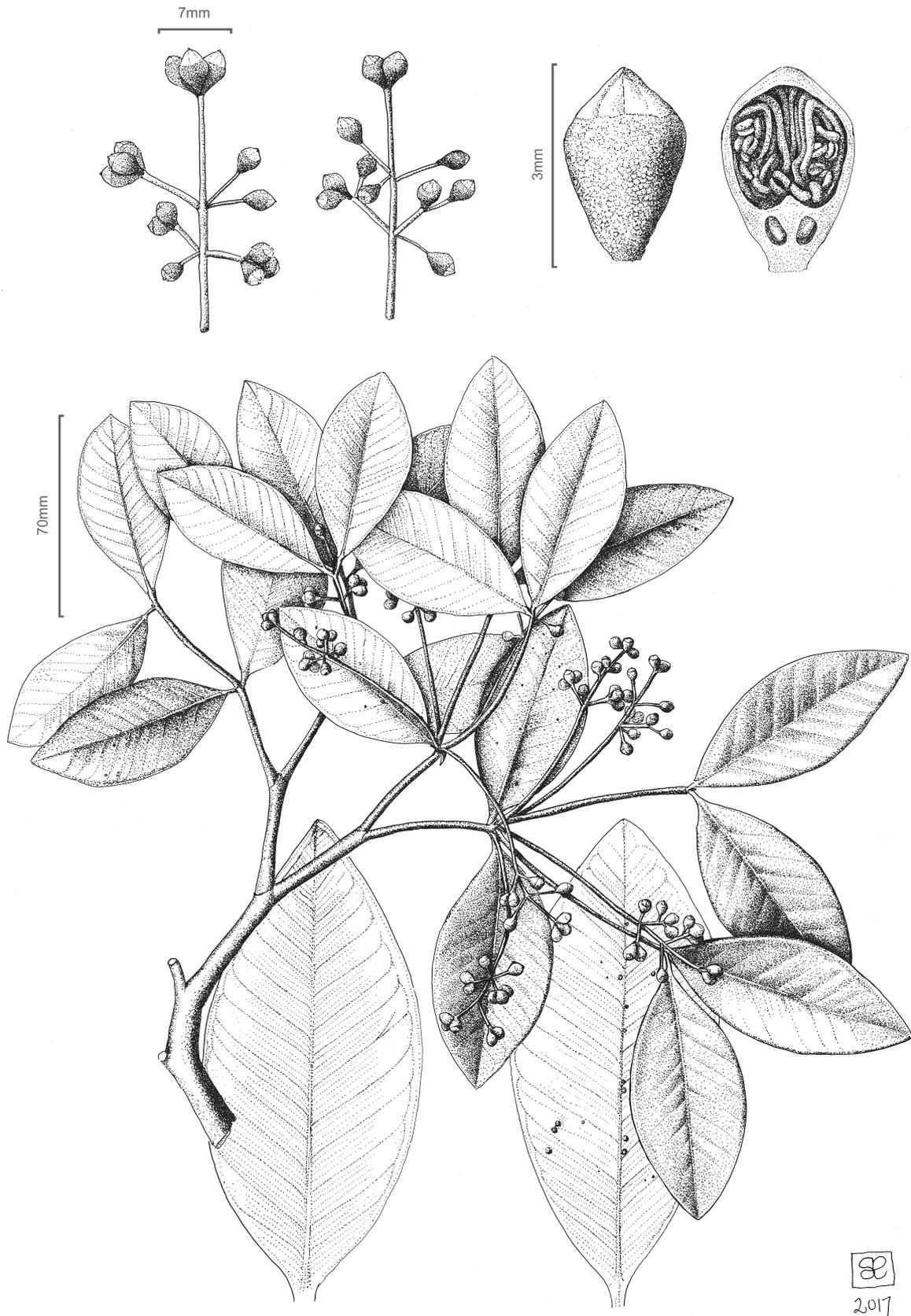


Figure 2: *Myrcia fariae* P.O. Rosa & Proença sp. n. A) Inflorescence an impoverished thyrus; B) Flower bud longitudinal section for internal view of the fillets and ovary; C) Branch.

During more than 10 years this possible new species was neglected, mainly due to the difficulty in evidencing the link between a plant collected in the middle of Goiás with a species from the Mesoamerican flora.

With the publication of the Myrtaceae “Superphylo” (Neotropical Myrtaceae Working Group: Staggemeier et al., 2024) the species matrix revealed a voucher from Bahia, Rio de Contas, Boa Sentença – Harley 54077 (Figure 3), in which the Mesoamerican and Brazilian specimens emerged as sister taxa with high bootstrap support. This voucher is identical to the ones collected in Goiás (examined material below), and identified as *Calyptranthes lindeniana*, before the synonymization of *Calyptran-*

thes to *Myrcia*, now *Myrcia calderonii*, during the studies of the first author (Rosa, 2015). Although we do not have a proven theory regarding how the disjunction discussed here occurred, many authors have already described similar events through long-distance fauna dispersal (Almeida & Mikich, 2018), which is one of the mechanisms cited as responsible for the high biodiversity of areas such as the Cerrado (Kuhlmann & Ribeiro, 2016), and whose decline in natural areas leads to an impoverishment of the fauna and a reduction in biodiversity itself (Béllo-Carvalho et al., 2023; Giombini et al., 2024; Campagnoli et al., 2025). The genetic evidence evaluated is sufficient to finally identify the vouchers listed below.

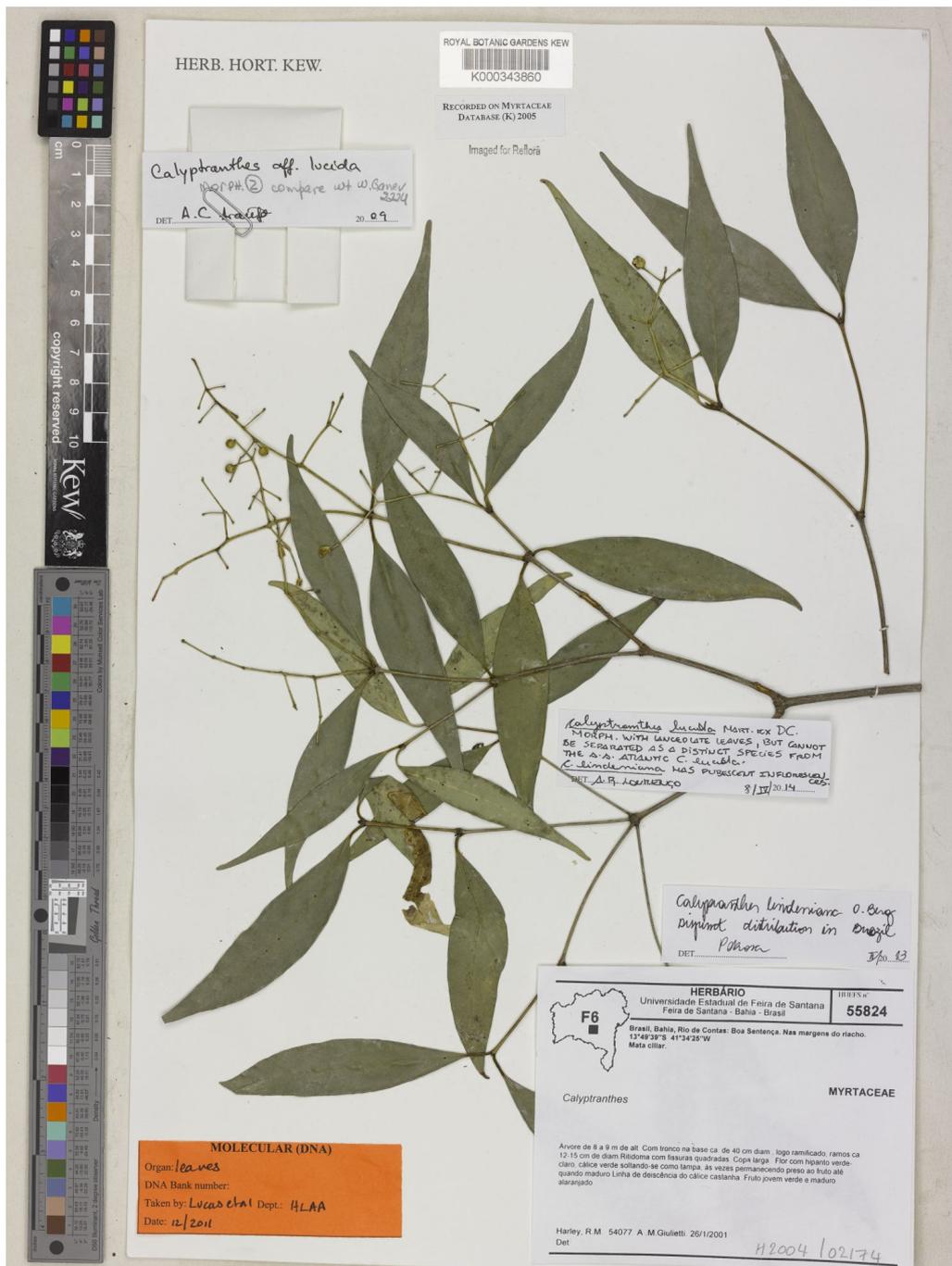


Figure 3: *Myrcia calderonii* (Standl.) A.R.Lourenço & Sánchez-Cháv. Collection Harley & Giulietti 54077, voucher included in the molecular analysis (Neotropical Myrtaceae Working Group: Staggemeier et al., 2024).

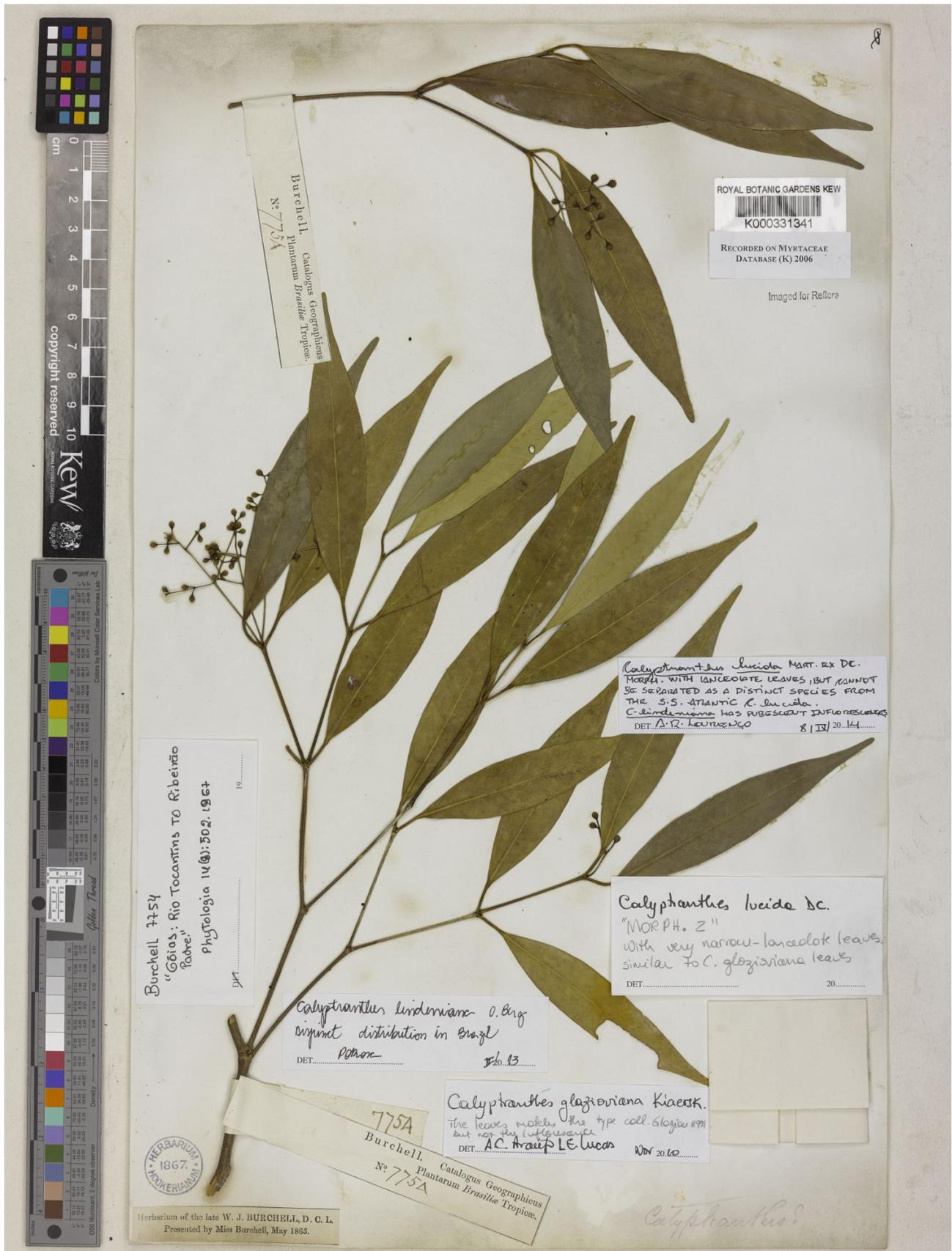


Figure 4: *Myrcia calderonii* (Standl.) A.R.Loureço & Sánchez-Cháv., Burchell 7754 collected between 28 March 1828 and 10 February 1830. Voucher deposited in the K herbarium which shows the taxonomic analyses of several specialists of the family.

Examined material: BRAZIL. Goiás: Rio Tocantins to Ribeirão Padre, between 28 March 1828 and 10 February 1830, Burchell 7754 (K!, Figure 4). Alto Paraíso de Goiás, estrada de chão entre São Jorge e Colinas

do Sul, fazenda Novo Horizonte, bordeando o rio Tocantins próximo ao encontro com o rio São Miguel, 14°16'38"S, 47°55'00"W, 14 November 1996, Mendonça et al. 2992 (IBGE!, UB!). Cavalcante, Margem da

estrada de Cavalcante para Minaçu, 18 October 2009, *Faria et al.* 696 (BHCB, ESA, HUEG, UB!). Cavalcante, Comunidade Kalunga Engenho II, córrego no caminho para a cachoeira Santa Bárbara, 17 January 2010, *Faria et al.* 735 (HUEG, UB!). Cavalcante, coletada na estrada Cavalcante-Minaçu, 20 March 2010, *Faria et al.* 814 (UB!). Cavalcante, Coletada na estrada Cavalcante-Minaçu, 20 March 2010, *Faria et al.* 815 (BHCB, HUEG, UB!). **Bahia: Rio de Contas**, Boa Sentença, 13°49'39"S, 41°34'25"W, 26 January 2001, *Harley & Giuliatti* 54077 (ASU, HUEFS, K!, UFP).

Geographic distribution: South Mexico to Honduras: México, Belize, Guatemala and Honduras. Brazil: Bahia and Goiás.

Comments: *Myrcia calderonii* occurs in Brazil in the states of Bahia and Goiás. Despite the scarce indument throughout the branches, all individuals analysed had only simple trichomes and not a mixture of simple and dibrachiate as is usual in the genus. The inflorescence is more developed with more flowers and the long-acuminate lanceolate leaf are the main differences between *M. calderonii* and *M. neolucida*. Molecular studies corroborated what morphology already specified, the specimens indicated in the list of materials examined are taxonomically and molecularly distinct from *Myrcia neolucida* (Neotropical Myrtaceae Working Group: Stagge-meier et al., 2024). It would be interesting to deepen the research on this set of species by increasing the analysis with more materials.

Conclusion

Despite the delay in the publication of the new species *Myrcia fariae* P.O.Rosa & Proença and in confirming the occurrence of *Myrcia calderonii* (Standl.) A.R.Lourenço & Sánchez-Chávez in Brazil, it was important to examine more evidence and consolidate taxonomic knowledge by combining morphological data and molecular analyses, providing the necessary support to aid decision-making, which is problematic to achieve based on few characters. The tools need to work together to be truly effective, and a solid foundation in classic taxonomy is as important as complex molecular analyses. Both discoveries reported here resulted from the critical examination of herbarium collections combined with field work in taxonomically undersampled areas. These findings reinforce that field expeditions to information-deficient regions remain indispensable for advancing biodiversity knowledge and, consequently, for grounding effective conservation measures and public policies. Field botanists need funding to continue discovering new and rare species.

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